

consumption to find any significant difference. **METHODS:** A total of 161 antibiotics are in Iran's drugs list. According to Iran's FDO regulations all pharmaceutical companies should report their sales statistics to this organization each month. Sales amount could be derived from this database state by state. According to WHO method, each drug ATC and DDD code have been derived. DID index (Defined daily dose /1000 Inhabitants/ Day) have been calculated according to the population of each states. **RESULTS:** Correlation coefficients of ascending trends of antibiotics in Northern states' and Iran have been reported respectively as following: In oral antibiotics, four classes have significant ascending trend: Betalactams (0.715 vs. 0.693), Cephalosporines (0.99 vs. 0.989), Macrolides (0.911 vs. 0.949), Quinolones (0.897 vs. 0.9). Three classes have significant descending trend: Amphenicoles (-0.836 vs. -0.76), Sulfonamides (-0.924 vs. -0.948), Aminoglycosides (-0.809 vs. -0.943). In parenteral antibiotics two classes have significant ascending trend: Imipenem (0.967 vs. 0.979), Macrolides (0.951 vs. 0.95). Two of them have significant descending trend: Betalactams (-0.916 vs. -0.79), Aminoglycosides (-0.809 vs. -0.943). **CONCLUSIONS:** Most trends were ascending and same as the pattern of whole countries consumption. These results approve the theory of the priority in training programs to clinicians and people according to RUD's goals in Northern states' same as other parts of country.

#### PHP26

##### CONSUMPTION OF ANTIDIABETICS IN SERBIA IN 2010: A COMPARISON WITH CROATIA AND DENMARK

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**OBJECTIVES:** Considering diabetes as a major public health problem worldwide, the aim of our study was to analyze overall volume of use of antidiabetics, compared to Croatia, as the neighboring country, and Denmark, chosen for its rational and conservative prescription practice. **METHODS:** Data for consumption of anti-hyperglycaemic drugs (A10) in 2010 were obtained by a retrospective, observational, population-based study. Utilization of these drugs was expressed as DDD per 1000 inhabitants a day (DID). **RESULTS:** In 2010, antidiabetics (A10) were used at a similar rate in Serbia, Croatia and Denmark (47.34 DID, 49.88 DID and 47.50 DID, respectively), but the share of utilization of insulins (A10A) and oral antidiabetics (A10B) differed between countries. Relatively high proportion of insulin use in Denmark (36.2% of all antidiabetics) compared to Serbia (22.0%) and Croatia (26.4%) may be attributed to high incidence of type 1 diabetes in Nordic countries and compliance with most of recent pharmacotherapeutic guidelines that suggest the use of long-acting insulins (A10AE) in type 2 diabetes (4.0 DID of A10AE in Denmark, in comparison to 1.28 DID in Serbia and 1.91 DID in Croatia). Proportions of oral antidiabetics use also differed between these countries. Metformin, as the only biguanide (A10BA) used and preferred oral agent for type 2 diabetes, accounted for 51.2% of total use of oral antidiabetics in 2010 in Denmark, while sulfonylureas (A10BB), as a second-line treatment, were used at a rate of 36.6%. In Serbia and Croatia, sulfonylureas were used predominantly (55.6% and 48.6, respectively). New medicinal products with effect on the incretin system (A10BH and A10BX) were used at a rate of 4.1 DID in Denmark, contrary to 0.45 DID in Croatia and 0.002 DID in Serbia. **CONCLUSIONS:** The large differences in utilization of various antidiabetics between observed countries suggest considerable variations in habits, especially with regard to type 2 diabetes treatment.

#### PHP27

##### THE EFFECT OF RETIREMENT ON MENTAL HEALTH

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**OBJECTIVES:** To explore the effect of retirement on retiree's mental health, this study investigated the change in the usage of sedative-hypnotic drugs after the retirement for sedative-hypnotic users. **METHODS:** We conducted a retrospective cohort study with comparison groups through following a population-based random sample containing one-million beneficiaries of Taiwan's National Health Insurance from 1999 to 2009. Individuals retired between 2000 and 2003 and aged between 50 and 64 were first identified. Those taking sedative-hypnotic drugs at least one year before and six years after retirement were selected as the study sample, and were further stratified into high-dosage and low-dosage users based on their defined daily doses (DDDs). A propensity score (PS) matching was conducted to select two non-retiree control groups with respect to sedative-hypnotic dosage. Each non-retiree was assigned a pseudo retirement date, the same retirement date as his/her matching retiree counterpart. Nonparametric Wilcoxon tests were conducted to compare the differences in DDDs between the retiree and control groups. Generalized estimating equations (GEE) were employed to investigate the odds ratios (ORs) of drug usage between the retiree and control groups. **RESULTS:** 9,687 retired sedative-hypnotic users were identified. After PS matching, the number of high-dosage users in both retiree and control groups was 3,265, and the number of low-dosage users was 3,072. The Wilcoxon tests revealed no difference in DDDs between the retirees and non-retirees before and after their retirements. The GEE analyses however showed that, compared to their non-retiree counterparts, the low-dosage retired users significantly reduced the dosage of after their retirement (OR=0.97,  $p < 0.05$ ). A similar trend was observed in the high-dosage users but no significance. **CONCLUSIONS:** The decrease in the dependence on sedative-hypnotic drugs after their retirements for low-dosage users might suggest the retirement had a positive influence on mental health.

#### PHP28

##### SYSTEMATIC REVIEW ON FACTORS AFFECTING PHARMACEUTICAL EXPENDITURES

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**OBJECTIVES:** To systematically identify the main factors those contribute towards the increase of pharmaceutical expenditures. **METHODS:** A systematic search of published studies was conducted in common major electronic databases using search terms "factors", "financing", "pharmaceutical", and "expenditures". To be included the studies need to 1) measure at least one of the following outcomes: total growth in pharmaceutical expenditures, price growth quantity growth; 2) A clear method to analyze the impact of factors affecting the increases of drug expenditures was mentioned; 3) were written in English. Non-primary articles that were published only as abstract, review; commentary and letter were excluded. Data were extracted from the primary eligible studies using data abstraction form. Information regarding study title, study author (s), country, year, study objective, study design, statistical methods to assess factors affecting pharmaceutical expenditures, results, and author (s) conclusions were collected. **RESULTS:** From a total of 2039 studies, only 20 studies were included for full review. The most significant determinants or factors of drug spending are demographic, disease category, public health, price, utilization, therapeutic choice, and residual -product mix. A number of studies from the review indicate that residual -product mix responsible for between approximately 30 per cent to approximately 493 per cent of total increases drug expenditures. **CONCLUSIONS:** Price change has little effect on expenditure increases compared with utilization and the residual. All the above factors need to be considered for optimum drug policy design. It is most important for policy makers to understand pharmaceutical spending trends, the factor influencing the rising of the limited resources and the main cost containment strategies.

#### PHP29

##### CONSIDERABLE DIFFERENCES IN THE UTILIZATION OF ANTIDEPRESSANTS BETWEEN SERBIA AND DENMARK

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**OBJECTIVES:** Depressive disorder is one of the major public health problems due to significant disability that it causes, as well difficulties in diagnostic procedures. The aim of the study was to determine the total antidepressant utilization in Serbia in correlation with Denmark and to get insight into financial resources allocations. Denmark was chosen for its developed pharmacotherapeutic practice. **METHODS:** Data for antidepressant (ATC group N06) utilization and consumption of financial resources in 2010 were retrieved from the annual reports of relevant public institutions. The ATC/DDD methodology was applied and results were expressed in defined daily doses (DDDs) per 1000 inhabitants per day (DID). **RESULTS:** An interesting result of our study is that the utilization of antidepressants in 2010 appeared to be 7-fold higher in Denmark (83.8 DID) than in our country (11.67 DID). In accordance with these results, the consumption of financial resources for group N06 was approximately 9-fold higher in Denmark (89 680.072 USD) than in Serbia (10.261.963 USD). The most commonly used group of antidepressants in both countries were selective serotonin reuptake inhibitors (SSRI) (67.3% and 73.76% of all antidepressants for Denmark and Serbia respectively) which complies with the most recent clinical guidelines. There was a considerable difference between Denmark and Serbia in the utilization of a group N06AX which includes new generation of antidepressants (22.7 DID and 1.39 DID respectively). **CONCLUSIONS:** The differences between selected countries in antidepressant utilization and consumption of financial resources are partly consequential to different socioeconomic and health policy factors. This study shows that the overall utilization of antidepressants in Serbia is lower than in Denmark, which implies possible underdiagnosing of affective disorders in general practice.

#### PHP30

##### THE UTILIZATION AND EXPENDITURE OF REIMBURSED DIGESTIVE ENZYME AGENTS IN TAIWAN

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**OBJECTIVES:** To analyze the current utilization and expenditure of reimbursed digestive enzyme agents (DEs) in Taiwan. **METHODS:** The encrypted claim database of National Health Insurance (NHI) was used to analyze the prescription patterns and the expenditure of DEs for types of diseases, health care specialties, levels of medical institution, and insured BNHI branch. **RESULTS:** We identified that 29 DEs, within 15 groupings, are reimbursed by NHI up to 2011. Given that most DEs were developed in earlier stage, while only 2 items were approved by the Taiwan Food and Drug Administration after 2000, these approved items had broader scope of approved indications and limited evidence on their clinical efficacy. According to the analysis of 2001-2010 NHI databases, the most enzymes prescribed disease was gastroenteritis, related uncomfortable symptoms, and so forth. Over the ten years, the number of medical orders increased from 22.77 million to 46.71 million. Medical costs increased from more than NT\$ 1 hundred million to over NT\$ 2 hundred million. The highest usage rate of medical orders, by specialties, is 64% in Internal Medicine, especially in Gastroenterology and in General Medicine. The second is 7% to 9.6 % in Family Medicine. The usage rate is increasing each year in Surgery, from 4.13% in 2011 to 9.27% in 2010. The usage rates of medical order by 15 groupings have various trends of levels between different medical institution, and different insured BNHI branch. **CONCLUSIONS:**